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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,693	01/03/2006	Hiroaki Koyama	CSP-115-A	8753
21828	7590	06/18/2007		
CARRIER BLACKMAN AND ASSOCIATES 24101 NOVI ROAD SUITE 100 NOVI, MI 48375			EXAMINER LIN, KUANG Y	
			ART UNIT 1725	PAPER NUMBER
			NOTIFICATION DATE 06/18/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/532,693	Applicant(s) KOYAMA ET AL.	
	Examiner Kuang Y. Lin	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,6,10,14 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,10,14 and 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060,845 for the same reasons as set forth in the previous office action.

Namely, JP '845 shows a method for prolonging service life of the casting die by maintaining the compressive residual stress of a die cavity surface for more than 1000 MPa (see [0003], [0028]) through a shot-peening and a nitriding process. Thus, JP '845 substantially shows the invention as claimed except it does not disclose the surface roughness. However, it would have been obvious to those of ordinary skill in the die casting art that the die cavity surface shall be maintained as smooth as possible such that to increase the heat transfer rate between the cast metal and the die surface and also to obtain a better surface

quality for the cast article. It would have been obvious to obtain the optimal roughness through routine experimentation. With respect to claim 3, it is conventional to use chrome molybdenum steel for making casting die as acknowledged by applicant as set forth in [007] of the instant specification.

4. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060845 as applied to claim 1 above, and further in view of JP 10-204,610 for the same reasons as set forth in the previous office action.

Namely, JP '610 shows to prevent seizure in a die by forming a dense coating layer having a lubricating effect and a thermal insulating effect and to improve the service life of the die by forming a nitrided layer containing iron sulfide on the die cavity surface. It would have been obvious to further include the iron sulfide of JP '610 in the nitrided layer of JP '845 in view of the advantage. With respect to claim 19, it would have been obvious to obtain the optimal particle sizes for peening and the temperature of the process chamber through routine experimentation.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060,845 as applied to claim 1 above, and further in view of US 6,546,968 to Nakagawa et al. for the same reasons as set forth in the previous office action.

Namely, Nakagawa et al. discloses that the atmosphere during nitriding treatment, instead of nitrogen gas, can be a nitrogen compound gas such as ammonia gas or the like. When the ammonia gas is used, the rate of nitriding reaction can be increased. At this time, by using together such gases as

hydrogen, nitrogen, argon or the like, the rate of nitriding reaction can be controlled. Thus, it would have been obvious to further provide the hydrogen gas of Nakagawa et al. in the nitriding process of JP '845 such that to better control the nitriding reaction.

6. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060845 in view of JP 10-204,610 as applied to claim 5 above, and further in view of US 6,546,968 to Nakagawa et al. for the same reason as set forth in the previous office action.

Namely, The treatment of Nakagawa et al. is the same as supra. It would have been obvious to further provide the hydrogen gas of Nakagawa et al. in the nitriding process of JP '845 such that to better control the nitriding reaction.

7. Applicant's arguments filed May 30, 2007 have been fully considered but they are not persuasive.

a. Applicant in page 2, last paragraph through page 3, second paragraph of the response applicant stated that the applied references (namely, JP '610 and JP '845) are related to different apparatus/method, which achieve different result (forged products vs. cast products), a person of ordinary skill in the art would not consider it obvious to combine the teachings thereof. However, it is common knowledge that both forged die and casting die have seizure problem if not properly addressed. The coating and lubricating are typical process to prevent the seizure in the die. Thus, it would have been obvious to adapt the concept of

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solving the seizure problem for the forging die of JP '610 in the casting die of JP '845 to prolong the service life thereof.

b. In page 3, 3rd paragraph of the response applicant stated that JP '610 is related to a forging die having thermal insulation properties, whereas the instant claimed casting die requires thermal shock resistance properties to minimize heat cracking and the chipping of the casting die. However, it is noted that the sulphonitriding treatment is applied to die of JP '610 and that of instant application. Thus, it is expected that the thermal properties of casting die of JP '845 having sulphonitriding treatment of JP '610 will be similar to that of instant casting die.

c. In page 3, 4th paragraph of the response applicant stated that the compressive residual stress of cavity surface larger than 1200 MPa, maximum height of roughness of cavity not more than 8 μm , a nitrided layer etc. are required to obtained desired thermal shock resistance properties and the prior art references fail to provide the claimed feature. However, JP '845 shows to maintain the compressive residual stress of a die cavity surface having nitrided layer for more than 1000 MPa (i.e. 1000-1300 MPa, see [0003] and [0028]). Further, since it is desirable to maintain the die cavity surface as smooth as possible such that to increase the heat transfer rate between the cast metal and the die surface and also to obtain a better surface quality for the cast article, it would have been obvious to obtain the optimal surface roughness of the casting

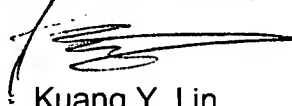
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die through routine experimentation. Thus, die of JP '845 having smooth die cavity surface will have the thermal shock resistance properties as claimed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is 571-272-1179. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Kuang Y. Lin
Primary Examiner
Art Unit 1725

6-6-07